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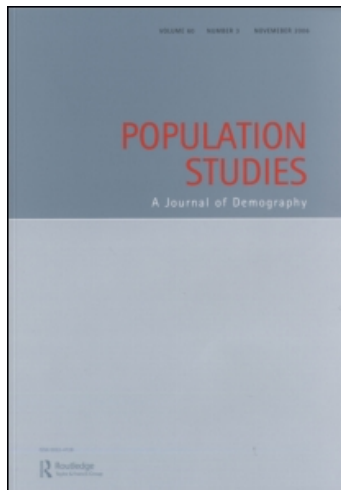
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# Influences of the family of origin on the timing and quantum of fertility in the Netherlands

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*This study examined to what extent family of origin influences age at first birth and final number of children. We took into account direct intergenerational transmission of fertility behaviour, family-life experiences around age 15, and the wider social context of the family of origin. Hazard regression analyses (N = 6,630) and Poisson regression analyses (N = 3,736) were performed using data from the 2002–03 wave of the Netherlands Kinship Panel Study. Besides a positive relation between parents' and their children's fertility patterns, we find that positive experiences of family life around age 15 encourage childbearing: the less conflict between parents experienced by the child during early adolescence, the younger the adult child at first birth, and the larger the number of the adult child's children. The number of children is also influenced positively by frequency of contact with non-residential relatives during early adolescence. The socio-economic status and religiosity of the parental family also affect fertility.*

**Keywords:** fertility; first birth; number of children; intergenerational transmission; family life; kinship network; social status; the Netherlands

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## Introduction

The influence of the parental home on people's family-related behaviour is a well-established fact in social science (Thornton 1980). With regard to fertility behaviour, many studies have found a positive correlation between the numbers of children of successive generations (see next section for references). Similarly a positive relationship between parents' and their children's age at first birth has been found (among others: Manlove 1997; Barber 2000), although this subject has been studied less often.

To explain the positive correlation of fertility patterns across successive generations, the literature usually points to the importance of processes of socialization, such as observational learning (Murphy and Wang 2001) and transmission of values and preferences (Thornton 1980; Barber 2000). However, socialization does not operate only through the direct transmission of fertility behaviours and attitudes from parents to children. The latter's preferences and behaviours in the realm of family formation are also influenced by the experiences of

family life within the kinship network in which they are reared. Features of family dynamics, such as conflicts between parents or frequent contact with non-residential relatives, produce positive or negative experiences of family life, experiences that might subsequently influence fertility preferences and behaviour by increasing or decreasing children's 'taste' for family. Thus it might be expected that people who had positive experiences of family life during their upbringing would be more eager to create a family of their own—they might want to have more children and have them at a younger age. Another possibility is that people with positive experiences of family life during their upbringing would be more inclined to produce a family like their parental family. In addition, the wider social context in which children are reared may also influence their subsequent fertility preferences and behaviour, because children are exposed to the opinions dominant in the socio-economic and cultural circles to which the family of origin belongs.

Against this background, the aim of our study was to examine the extent to which fertility behaviour of children is influenced by characteristics of their

family of origin. More specifically, we focused on the role played by (i) direct intergenerational transmission of fertility behaviour, (ii) family experiences within the kinship network, and (iii) the wider social context of the family of origin. By doing so, we believe we have added to existing knowledge in several ways. We have extended the socialization perspective that focuses on intergenerational transmission of fertility behaviour by including experiences of family life that people have in early adolescence, and by examining the influence of the wider social context in which the child is reared. In studies of the intergenerational transmission of fertility, socio-economic and cultural characteristics of the parents or children have sometimes been taken into account as control variables, but we incorporated them into our theoretical framework as well. In addition, we studied both age at first birth and number of children of successive generations, in order to give a broad picture of how the family of origin influences fertility; we were able to investigate whether certain characteristics of the parental family influence only the timing of first birth or the final number of children, or both.

To study these issues we used data from the first wave (2002–03) of the Netherlands Kinship Panel Study. We conducted event history analyses to study effects on the timing of first birth and Poisson regression analyses to study effects on total number of children.

## Theory and previous research

Processes of socialization are important mechanisms by which the family of origin may influence people's fertility behaviour. Previous research has focused on the way people's fertility behaviour was influenced by their parents' fertility behaviour and underlying values. Numerous studies in different time periods and countries have revealed a positive correlation between number of siblings and number of own children (among others: Pearson and Lee 1899; Berent 1953; Duncan et al. 1965; Johnson and Stokes 1976; Zimmer and Fulton 1980; Anderton et al. 1987; Murphy and Wang 2001). Fewer studies have examined whether there is also a positive correlation between age at first birth of parents and that of their children. Most studies on this issue have focused on the intergenerational transmission of teenage motherhood (Furstenberg et al. 1990; Horwitz et al. 1991; Kahn and Anderson 1992; Manlove 1997) and have shown that children of very young mothers also have a higher risk of having their first child at a

young age. The studies by Barber (2000, 2001) and Steenhof and Liefbroer (2008) were not limited to teenage births and also included men. These studies indicated a positive correlation between parents' and their children's age at first birth.

These intergenerational continuities in fertility behaviour are usually explained by a number of socialization-related mechanisms. Growing up in a family with many siblings may lead to a preference for producing a large family (Murphy and Wang 2001; Murphy and Knudsen 2002). In the same way growing up with young parents may lead to a preference for becoming a parent at a relatively young age oneself. In addition, children's fertility behaviour might be influenced by their parents' fertility values and preferences (Axinn et al. 1994). The assumption of these studies is that the fertility behaviour of the parents reflects their values and preferences, and that the transmission of these to their children will lead to positive relationships between parents' and children's fertility patterns (Hendershot 1969; Thornton 1980; Barber 2000). Besides the transfer of values, social pressure to behave according to the fertility norms of one's parents may also play a role. Furthermore, during socialization parents may transmit knowledge about and attitudes towards the use of birth control to their children (Thornton 1980; Anderton et al. 1987). Finally, siblings may influence childbearing because their childbearing behaviour functions as an example (Axinn et al. 1994; Powers and Hsueh 1997; Powers 2001) and because the existence of kin support makes childrearing easier (Murphy and Wang 2001). The mechanisms sketched above, predicting transmission of fertility behaviour from one generation to the next, lead to the following hypotheses:

- (H1a) The younger the parents at first birth, the younger their child at first birth.
- (H1b) The larger the number of siblings, the larger the number of own offspring.

To be able to disentangle intergenerational transmission of birth timing and number of children, we also examined the influence of number of siblings on the timing of first birth and the influence of parents' ages at first birth on the child's number of children.

Fertility preferences might also be influenced by the family of origin in more complex ways. For instance, Axinn and Thornton (1996) suggested that the divorce of parents leads to a more general negative attitude towards marriage and family life among both parents and their children and therefore

reduces the children's desire for children of their own, a proposition supported by their findings. Similarly, Larson et al. (1998) showed that children's feelings and attitudes towards marriage are more likely to be negative if their parents have a troubled relationship than if they have a good one. One could assume from these studies that, by installing a strong 'taste' for family, positive experiences of family life during a child's upbringing can lead to higher fertility. A high degree of conflict between parents or a divorce when the children are young, is likely to result in negative feelings about family life among the children, and consequently in later and lower fertility. (A contrary proposition—that young people opt for early childbearing as a way of escaping from a negative home environment—seems unlikely to apply in the Netherlands, where teenage parenthood is very rare.)

Feelings about family life might also be influenced by contacts outside the nuclear family, in particular with other members of the broader family network. For instance, Bengtson (2001) emphasizes the important role that grandparents play in the socialization of their grandchildren. Although intensive family contacts might also have negative aspects, we assume that intensive contact with extended family members generally leads to more positive feelings towards family life and thus to higher fertility preferences. Hence, we formulated Hypotheses 2a and 2b:

- (H2a) The more positive the experiences of family life in early adolescence, the younger the child at first birth.
- (H2b) The more positive the experiences of family life in early adolescence, the larger the number of the child's offspring.

The extent to which one had positive or negative experiences of family life in early adolescence might also influence fertility behaviour in an alternative way. We might expect that people who had positive experiences of family life would be more inclined to create a family like their family of origin than people who had negative experiences. A similar idea was formulated by Duncan et al. (1965), who proposed that whether a child has a satisfying or an unsatisfying experience in the family of origin affects whether the child attempts to recapture the earlier experience when building a family. Thus, instead of the main effects of family experiences predicted in Hypotheses 2a and 2b, this assumption predicts that experiences of family life in early adolescence

interact with parents' age at first birth and with the number of children in the family of origin. Duncan et al.'s suggestion that satisfaction with family of origin leads to a stronger influence of number of siblings on number of children received support from studies conducted in the 1960s and 1970s (Westoff and Potvin 1967; Hendershot 1969; Bumpass and Westoff 1970; Johnson and Stokes 1976), but does not seem to have received much attention in recent literature. However, Cunningham and Thornton (2006) found that attitudes towards marriage and its alternatives were more strongly transmitted from parents to children if the quality of the parents' relationship was high. Studies on intergenerational transmission of age at first birth did not include satisfaction with family. As an alternative to Hypotheses 2a and 2b, we proposed:

- (H3a) The more positive the experiences of family life in early adolescence, the stronger the influence of parents' age at first birth on the child's age at first birth.
- (H3b) The more positive the experiences of family life in early adolescence, the stronger the influence of number of siblings on own number of children.

As well as being affected by parents' specific fertility behaviours and values and by more general experiences of family life in the kinship network, fertility behaviour might also be influenced by the wider social context of the parental family, in at least three different ways. First, the socio-economic and cultural grouping to which the parents belong might influence the children's fertility values and preferences. We assume that parents' educational level, whether the mother is employed, and whether the parents are religious during a child's upbringing have an effect. In families where parents are well educated or the mother is employed, life goals other than family formation, such as having a career, might be given more emphasis than they receive in families with less educated parents or non-employed mothers. Murphy and Wang (2001) found that the higher the parent's educational level, the fewer children they have. Barber (2000) found that those whose parents' average educational level was high and whose mothers were employed when they were aged 15, were older when they had their first child than people with less educated parents and whose mothers were not employed. Michael and Tuma (1985) found that the higher either parent's education, the older was their child at first birth (for white men and women and black men), and that white women whose

mothers were employed when they were aged 14, had their first child at a younger age. Finally, religious exposure during childhood might influence young adults' childbearing dispositions, since most religions encourage childbearing (Pearce 2002).

A second way in which the social context of the parental family may influence their children's fertility behaviour is through parents' financial resources. Easterlin's hypothesis (1969) predicts that the number of children varies negatively with people's level of aspirations for material goods. Easterlin argued that because consumption aspirations can be assumed to develop in the parental home, parents' income affords a proxy for the children's consumption aspirations, leading to the prediction of a negative effect of parents' income or economic status on their offspring's number of children. Thornton (1980) found this negative effect, but Behrman and Taubman (1989) did not. The same reasoning could be applied to age at first birth: if consumption aspirations are high, procreation will be postponed. Alternatively, it could be argued that, because parents' resources can help young adults to settle and start a family, parent's income will have a negative effect on their offspring's age at first birth and a positive effect on their offspring's number of children. A study by Knijn and Liefbroer (2006) showed that parents with higher incomes give more financial support than parents with lower incomes to their adult children.

Finally, the influences of the socio-economic and cultural positions of the parental family could be indirect, since parents are likely to transmit these positions to their children. For example, Pearce (2002) found that children of mothers who frequently attended religious services were more pronatalist than the children of mothers who attended them more rarely, but she also found that this effect operated entirely through the young adult's own religious participation and the importance he or she attached to religion. As another example: the negative effect of parents' financial status on (expected) number of children found by Thornton (1980), was mediated through the second generation's educational level. However, there is also evidence that parent's social status has an independent effect on the child's fertility: the negative effect of parent's education on children's number of offspring found by Murphy and Wang (2001) remained after controlling for the child's educational level. In general we expected:

- (H4a) The socio-economic status and cultural position of the family of origin influence the child's age at first birth.

- (H4b) The socio-economic status and cultural position of the family of origin influence the child's number of offspring.

In Table 1 we summarize the effects we expected from the hypotheses presented above.

## Method

### *Data*

The data used in this study were from the Netherlands Kinship Panel Study (Dykstra et al. 2005), a large-scale survey in the Netherlands of 8,161 men and women aged 18–79 from a random sample of the addresses of private households. The data were collected in 2002 and 2003, using a combination of computer-assisted face-to-face interviews and additional self-administered questionnaires. The response rate was 45 per cent, which is comparable to that of other large-scale surveys in the Netherlands (Dykstra et al. 2005). Response rates in the Netherlands are generally lower than those in other countries (De Leeuw and De Heer 2001). Women, middle-aged respondents, and respondents with children in the household were overrepresented in the sample. A weight factor was constructed to correct for these discrepancies between the sample and the population. All analyses were performed on the weighted sample.

The following categories of respondent were eliminated from the sample: the 8 per cent who did not return the self-administered questionnaire; the 8 per cent of the remainder who had half-siblings or stepsiblings; and respondents whose parents had never lived together, those who had their first child before the age of 16, and those whose mother or father had their first child before the age of 16. We were left with a sample of 6,630 respondents. The reason for removing respondents who had half-siblings or stepsiblings from the sample was that, because they were less likely to have been brought up together than full siblings, the transmission of fertility behaviour in their families may have differed from that in families with full siblings (Murphy and Knudsen 2002). (Our data did not contain information on whether half-siblings ever lived in the same household as the respondents, or for how long co-resident stepsiblings shared households.) For the analyses of effects on the number of children, we selected women aged over 40 and men aged over 45, because they were likely to have finished their childbearing period. In the data-set, only about 2

**Table 1** Expected direction of effects of family-of-origin variables on age at first birth and number of children. (See text for details of Hypotheses H1a–H4b)

	Age at first birth	Number of children
Parents' fertility behaviour (H1a and H1b)		
Parents' age at first birth	+	
Number of siblings		+
Family-life experiences in early adolescence (H2a and H2b)		
Conflict between parents	+	–
Parents' divorce before respondent left the parental home	+	–
Contact with extended family members	–	+
Interactions between parents' fertility behaviour and family-life experiences in early adolescence (H3a and H3b)		
Parents' age at first birth * Conflict between parents	–	
Parents' age at first birth * Parents' divorce	–	
Parents' age at first birth * Contact with extended family members	+	
Number of siblings * Conflict between parents		–
Number of siblings * Parents' divorce		–
Number of siblings * Contact with extended family members		+
Social status of the family of origin in early adolescence (H4a and H4b)		
Parents' educational attainment	+	–
Mother's employment status	+	–
Father's job status	+ or –	+ or –
Parents' religiosity	–	+

per cent of women had children above age 40 and only 2 per cent of the men had children above age 45. The resulting sample for the analyses of the effects on number of children comprised 3,736 respondents.

### Variables

The dependent variables in the study were age at first birth and final number of children. Age at first birth was measured in years. For further explanation of the construction of the dependent variable in the hazard analyses, see the 'Method of Analysis' section. The dependent variable in the analyses of number of children was defined as the number of natural children and adopted children, including deceased ones.

Next, we discuss the independent variables. Both mother's and father's age at the birth of their first child were included. Number of siblings was measured as the number of full and adopted siblings, excluding those who died in the first year of life or before the respondent turned 13 years of age. To have included siblings who died within 1 year might not have given a true reflection of the parents' fertility preferences or values, since after the death of a young child they might have gone on to have another child that they would not have had otherwise. Also, if a sibling had died when the respondent

was young, the respondent would not have grown up with this sibling throughout his or her entire childhood. We used behavioural indicators for characteristics of family dynamics in early adolescence that might have caused the experience of family life to be negative or positive. The two variables used as measures of experience of family life in the nuclear family were the degree of conflict between the parents and whether they divorced. The degree of conflict between parents was measured by four questions, each referring to the time when the respondent was about 15 years old: 'How often did your parents have heated discussions?'; 'How often did one of your parents put down and blame the other?'; 'How often did your parents not want to talk to each other for a while?'; and 'How often did arguments get out of hand?' Answers were coded as 1 (never), 2 (once or twice), or 3 (frequently), and we used the mean score for the analyses. Cronbach's alpha for this 4-item scale was 0.78. Parents' divorce was defined as the divorce or separation of the parents, including the separation of unmarried parents, and was coded 1 if the parents divorced before the respondent left the parental home and 0 if the parents either did not divorce or divorced after the respondent left the parental home.

As an indicator of family-life experiences within the extended family, we used the frequency of overnight family visits during the childhood of the respondent. It was measured by the following

questions: 'Did you ever go and stay with your mother's family when you were young (that is to say, until you were 15 years old)?'; 'Did members of your mother's family ever come and stay with you when you were young?' These questions were repeated for the father's family. Answers were coded as 1 (never), 2 (occasionally), and 3 (frequently) and again we used the mean score.

As indicators of the socio-economic status and cultural position of the parental family, we used mother's and father's educational attainment, mother's employment status, father's job status (as a proxy for family income), and the religiosity of the parents, with all except mother's and father's educational attainment referring to the period when the respondent was (up to) about 15 years old. It seemed reasonable to assume that in most cases parents' educational attainment had changed little since the child was aged 15. The variable was measured on a scale ranging from 1 (primary school not finished) to 10 (postdoctoral degree). We coded mother's employment status 1 if she had been employed outside the home for most of the respondent's childhood (until about age 15) and 0 otherwise. The respondent was asked about the father's occupation when the respondent was aged 15 (or younger if the father did not have an occupation at that time). These occupations were coded using the International Socio-economic Index of occupations (Ganzeboom et al. 1992), on which occupations are scored from 10 to 90. The measure of parents' religiosity was whether the respondent indicated that his or her parents counted themselves as belonging to a particular religious denomination when the respondent was aged 15. Since we had no reasons to expect large differences in fertility behaviour between Catholics and Protestants in the Netherlands (Statistics Netherlands 2005), and since the number of parents with a non-Christian religion is so small (3.6 per cent of the population), we decided to distinguish only between religious and not-religious. We created two dummies: both parents religious (1 = yes); one parent religious, one not (1 = yes).

We used sex (0 = male, 1 = female) and year of birth as control variables. The average age at first birth in the Netherlands decreased during the twentieth century until 1970 and then increased, and the decrease in number of children has stagnated since the mid-1980s (Statistics Netherlands 2007). We therefore also included year of birth squared in the analyses. Year of birth was centred at its mean to make the interpretation of its effects easier. We did not include information on the child's marital status in our models, for two reasons. First,

the time-varying nature of marital status makes it difficult to include it in a meaningful way in the analysis of effects on number of children. Second, and more important, we felt that the decision to marry is highly endogenous to the decision to have children, and thus that including marital status as a covariate in our analysis of entry into parenthood might bias the estimates of other covariates in the model.

Our data on the situation in the family of origin are based on retrospective accounts. Given the potential recall bias inherent in such measures, caution is needed if working with them. It has been shown that recall of life events is quite good (Poulain et al. 1992). Unfortunately, research on the validity of responses to retrospective enquiries about perceptions of earlier experience is scarce. In a study of the influence of psychological distress on the recall of childhood experience, Amato (1991) showed that correlations between ratings of childhood family characteristics over a 14-week period were quite stable—correlations over time on perceived marital quality of the parents and on perceived violence between the parents were 0.90—and considerably more stable than reports of psychological distress. One of Amato's conclusions (1991) is that retrospective accounts of early family life can be used to explain relatively objective adult variables (like our dependent variables). Because recall of perceptions of family life in early adolescence might also be influenced by the adult child's perception of the quality of his or her current relationship with the parents, we included a measure of its current quality (if the parents were alive) in our models. Its inclusion did not change the effects of our retrospectively asked questions about family-of-origin characteristics on age at first birth and final number of children.

### *Method of analysis*

To examine family influences on the age at first birth, Cox regression hazard rate models were estimated with the hazard of first birth as the dependent variable. People were at risk from age 16 until the event (first birth) occurred. Time was measured as age in years. If respondents had not experienced a birth before the interview, they were censored at their age at the time of the interview or, if they were older than age 45 at that time, they were censored at age 45. Respondents older than age 45 at the time of their first birth were also censored at the



age of 45. The average observation period was 13.0 years. Because men usually have their first child at a later age than that of women, the Cox regression analyses were stratified by sex.

To examine family influences on the final number of children, we used Poisson regression analyses (see Murphy and Wang 2001). A Poisson distribution represents the chance that an event (in our case, birth) will occur a certain number of times. Our data meet the assumption of the Poisson distribution: the mean number of children is equal to its variance. Poisson regression models were estimated using a selection from the sample that comprised women above age 40 and men above age 45. Analyses were performed using the Stcox and the Poisson procedures in Stata (StataCorp 2005).

## Results

### *Descriptive characteristics*

In Table 2 we present the descriptive characteristics of the sample. In the sample for the analyses of age at first birth, 66.4 per cent have had at least one child. The average age at first birth is 27.9, whereas the average age at first birth of the respondents' mothers is 25.5 years. In the sample for analyses of number of children, the respondents have on average 2.3 children. Their average number of siblings is 3.6. A very small percentage of the respondents experienced the divorce of parents before the age of 18. If we had included respondents with half-siblings and stepsiblings, this percentage would have been somewhat higher. Because the average age of the sample for analyses of effects on age at first birth is lower than that of the sample for analyses of number of children (which includes only women aged over 40 and only men aged over 45), the samples differ with regard to the parents' socio-economic and cultural characteristics, though they do so in line with expectations.

### *Age at first birth*

The results of the multivariate Cox regression analyses are presented in Table 3. Note that a positive effect on the hazard of first birth implies a negative effect on age at first birth and that the coefficients are unstandardized. Model 1 shows first of all that, in line with Hypothesis 1a, the age of the mother and the age of the father at first birth

negatively influence the hazard of the respondent's first birth, implying that the older the parents were at their first birth, the older is their child at first birth. The effects of mother's age and father's age at first birth are of about the same magnitude. Although we did not formulate a hypothesis about the effect of number of siblings on age at first birth, it turns out that there is an effect of number of siblings, in addition to the effect of the parents' ages at first birth: the more siblings a child has, the younger the adult child at first birth.

Next we look at the effects of the variables that refer to the respondent's experiences of family life in early adolescence. The degree of conflict between parents has a negative effect on the hazard of first birth: the more conflict between parents experienced by the child, the older the adult child at first birth. The frequency of overnight family visits has a positive effect: the more visits, the sooner the adult child's first child arrives. These findings support Hypothesis 2a. It is, however, not supported by the finding for having experienced parents' divorce before leaving the parental home since this does not influence age at first birth.

We now turn to the effects of the socio-economic status and cultural position of the family of origin. As expected, the more educated the mother and father, the more their child is likely to postpone parenthood, though the mother's education has a stronger influence than the father's. The higher the father's job status, the more his child postpones first birth. This might be considered to support the idea that growing up in a well-off family leads to higher consumption aspirations, leading in turn to postponement of childbearing. Thus, the alternative assumption—that a father's high job status leads to earlier childbearing by his children, because it means parents can help their children to afford childbearing—is not confirmed. Mother's employment status and parents' religiosity do not affect the timing of first birth. Thus, Hypothesis 4a is partly confirmed.

To test Hypothesis 3a, which predicts that the more positive one's family experiences in early adolescence, the stronger the intergenerational transmission of age at first birth, we added the interaction terms of mother's age with conflict between parents, overnight family visits, and parents' divorce, and we added the same interaction terms for father's age. The results of these analyses are presented in Model 2 of Table 3. None of these interaction terms have an effect, nor do they have one when added to the model one at a time (results not shown). Thus Hypothesis 3a is not confirmed.

**Table 2** Descriptive characteristics of the sample for models of age at first birth and the sample for models of number of children, the Netherlands 2002–03

	Sample for models of effects on age at first birth ( <i>N</i> = 6,630)		Sample for models of effects on number of births ( <i>N</i> = 3,736)	
	M	SD	M	SD
Number of children	1.60	1.48	2.25	1.46
Distribution of number of children	Per cent		Per cent	
0 children	33.64		13.72	
1 child	11.13		9.72	
2 children	30.88		39.82	
3 children	15.76		22.45	
4 children	5.51		8.75	
5 or more children	3.08		5.54	
Observation period <sup>1</sup>	12.99	6.73		
Age at first birth (only respondents who had a child)	27.88	4.61	27.41	4.64
Parents' fertility variables				
Mother's age at first birth	25.53	4.20	26.00	4.43
Father's age at first birth	28.08	4.07	28.65	4.94
Number of siblings	2.94	2.40	3.64	2.67
Family-life-experience variables				
Degree of conflict between parents when respondent aged 15 <sup>2</sup>	1.44	0.48	1.41	0.48
Parents' divorce before respondent left parental home <sup>3</sup>	0.06	0.24	0.04	0.19
Frequency of overnight family visits in respondent's early adolescence <sup>2</sup>	1.77	0.51	1.78	0.54
Parents' social status variables				
Mother's educational attainment <sup>4</sup>	3.50	1.83	2.93	1.55
Father's educational attainment <sup>4</sup>	4.21	2.25	3.71	2.14
Mother's employment status in respondent's early adolescence <sup>5</sup>	0.18	0.39	0.14	0.35
Father's job status when respondent aged 15 <sup>6</sup>	46.45	15.64	44.39	14.93
Parents' religiosity when respondent aged 15	Per cent		Per cent	
Both parents not religious	17.13		13.87	
Both parents religious	75.80		81.65	
One parent religious, other not	7.08		5.48	
Control variables				
Sex <sup>7</sup>	0.51	0.50	0.53	0.50
Year of birth <sup>8</sup>	1957.36	15.80	1944.82	10.05

Notes: <sup>1</sup>Years. <sup>2</sup>Scale: 1–3. <sup>3</sup>0 = no, 1 = yes. <sup>4</sup>Scale: 1–10. <sup>5</sup>0 = not employed, 1 = employed. <sup>6</sup>Scale: 10–90. <sup>7</sup>0 = male, 1 = female. <sup>8</sup>Birth year was centred at its mean.

Source: Netherlands Kinship Panel Study 2002–2003.

Finally, in both models year of birth and its square have a negative effect on the hazard of first birth. Given the coding scheme, this implies that across cohorts the average age at first birth first decreased then increased.

### Number of children

Table 4 shows the results of the multivariate Poisson models for the number of children of women aged over 40 and men aged over 45. Model 1 shows that number of siblings positively influences number of own children, confirming Hypothesis 1b. Mother's

and father's ages at first birth do not influence their children's number of children.

The degree of conflict between parents experienced during childhood has a negative effect on the adult child's number of children. An increase from the lowest score on conflict between parents (never any conflicts) to the highest score (frequent conflicts) is associated with a decrease in number of children by 14.3 per cent ( $(\exp -0.077)^2 = 0.857$ ). This finding supports Hypothesis 2b. Frequency of overnight family visits during early adolescence does not influence number of children, nor does parents' divorce before leaving the parental home. To test whether our decision to exclude respondents with

**Table 3** Cox regression estimates of effects of family-of-origin variables on age at first birth ( $N=6,630$ ), the Netherlands 2002–2003

	Model 1		Model 2	
	B	SE	B	SE
Parents' fertility				
Mother's age at first birth	−0.012**	0.005	0.021	0.021
Father's age at first birth	−0.015***	0.004	−0.047*	0.019
Number of siblings	0.023***	0.007	0.024***	0.007
Family-life experiences				
Degree of conflict between parents when respondent aged 15 <sup>1</sup>	−0.092**	0.032	−0.241	0.120
Parents' divorce before respondent left parental home <sup>2</sup>	−0.010	0.066	0.429	0.425
Frequency of overnight family visits in respondent's early adolescence <sup>1</sup>	0.070*	0.028	0.138	0.159
Parents' social status				
Mother's educational attainment <sup>3</sup>	−0.055***	0.010	−0.055***	0.011
Father's educational attainment <sup>3</sup>	−0.022*	0.009	−0.022*	0.009
Mother's employment status in respondent's early adolescence <sup>4</sup>	0.058	0.041	0.056	0.041
Father's job status when respondent aged 15 <sup>5</sup>	−0.003**	0.001	−0.003**	0.001
Parents' religiosity when respondent aged 15 (reference category = both parents not religious)				
Both parents religious	−0.036	0.042	−0.036	0.042
One parent religious	−0.028	0.069	−0.026	0.069
Interactions				
Mother's age at first birth * Conflict between parents			−0.009	0.010
Mother's age at first birth * Parents' divorce			0.011	0.019
Mother's age at first birth * Overnight family visits			−0.012	0.008
Father's age at first birth * Conflict between parents			0.014	0.009
Father's age at first birth * Parents' divorce			−0.027	0.018
Father's age at first birth * Overnight family visits			0.009	0.007
Control variables				
Year of birth <sup>6</sup>	−0.025***	0.002	−0.026***	0.002
Square of year of birth <sup>6</sup>	−0.001***	0.000	−0.001***	0.000
Log pseudo likelihood	−32,095.0		−32,092.4	

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Notes: Models are stratified by sex. <sup>1</sup>Scale: 1–3. <sup>2</sup>0 = no, 1 = yes. <sup>3</sup>Scale: 1–10. <sup>4</sup>0 = not employed, 1 = employed. <sup>5</sup>Scale: 10–90. <sup>6</sup>0 = not religious, 1 = religious. <sup>6</sup>Birth year was centred at its mean.

Source: As for Table 2.

half-siblings and stepsiblings from the analysis influenced these results, we re-ran our models for age at first birth and number of children with the respondents that have half-siblings and stepsiblings included in the samples. The results for the effects of parents' divorce and conflict between parents do not differ from those obtained with the more restricted sample.

We now turn to the effects of parents' social status and cultural position. We observe that the higher the mother's educational level, the fewer children the respondent has. If both parents were religious when the child was aged 15, the adult child has more children than if both parents were not religious, which is also in line with expectations. There is no difference in number of children between those who had one religious parent and those who grew up with two non-religious parents. Father's educational at-

tainment, mother's employment status, and father's job status do not influence number of children. These results provide partial support for Hypothesis 4b.

We tested Hypothesis 3b—the more positive the experiences of family life, the stronger the effect of number of siblings on the adult child's number of children—by interacting number of siblings with conflict between parents, overnight family visits, and parents' divorce. The results of these analyses are shown in Model 2 of Table 4. None of these interaction terms is statistically significant. Nor are they significant when added to the model without the other interaction terms. Thus, neither Hypothesis 3a nor Hypothesis 3b is supported by our study.

Finally, in both models year of birth has a negative effect and its square a positive effect on number of children, indicating that the number of children

**Table 4** Poisson regression estimates of the effect of family-of-origin variables on number of children ( $N = 3,736$ ), the Netherlands 2002–2003

	Model 1		Model 2	
	B	SE	B	SE
Parents' fertility				
Number of siblings	0.022***	0.005	0.020	0.014
Mother's age at first birth	−0.002	0.005	−0.002	0.005
Father's age at first birth	0.001	0.003	0.001	0.004
Family-life experiences				
Degree of conflict between parents when respondent aged 15 <sup>1</sup>	−0.077**	0.026	−0.069	0.034
Parents' divorced before respondent left parental home <sup>2</sup>	0.056	0.054	0.016	0.080
Frequency of overnight family visits in respondent's early adolescence <sup>1</sup>	0.033	0.020	0.022	0.029
Parents' social status				
Mother's educational attainment <sup>3</sup>	−0.025**	0.009	−0.025**	0.007
Father's educational attainment <sup>3</sup>	−0.008	0.009	−0.008	0.009
Mother's employment status in respondent's early adolescence <sup>4</sup>	0.047	0.030	0.048	0.027
Father's job status when respondent aged 15 <sup>5</sup>	0.001	0.001	0.001	0.001
Parents' religiosity when respondent aged 15 (reference category = both parents not religious)				
Both parents religious	0.068*	0.028	0.069*	0.025
One parent religious	0.038	0.050	0.038	0.044
Interactions				
Number of siblings * Conflict between parents			−0.003	0.008
Number of siblings * Parents' divorce			0.014	0.012
Number of siblings * Overnight family visits			0.003	0.006
Control variables				
Sex <sup>6</sup>	0.006	0.027	0.006	0.021
Birth year <sup>7</sup>	−0.008***	0.001	−0.008***	0.001
Square of birth year <sup>7</sup>	0.000**	0.000	0.000**	0.000
Constant	0.731***	0.102	0.740***	0.112
Log pseudo likelihood	−6,360.32		−6,350.07	

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Notes: <sup>1</sup>Scale: 1–3. <sup>2</sup>0 = no, 1 = yes. <sup>3</sup>Scale: 1–10. <sup>4</sup>0 = not employed, 1 = employed. <sup>5</sup>Scale: 10–90. <sup>6</sup>0 = male, 1 = female. <sup>7</sup>Birth year was centred at its mean.

Source: As for Table 2.

decreased across cohorts, but that the decrease was not linear.

### *Sex differences in transmission patterns*

Up to this point, we used the assumption that the family of origin has the same influence on both sons and daughters. However, it has been argued that daughters may be more strongly affected than sons by their family of origin, since daughters have stronger bonds with their family as adults (Horowitz 1985; Moore 1990), though this does not necessarily imply that daughters are also more strongly affected by their family during childhood. To examine this issue, we tested the interaction effects of the family-of-origin variables with sex of respondent (results are available upon request from the first author).

In the analysis of the number of children, we do not observe statistically significant interaction effects between family-of-origin characteristics and sex of respondent, suggesting that with regard to fertility quantum, sons and daughters are influenced by their family of origin in the same way. With regard to the timing of first birth, most interactions between family-of-origin variables and sex are not statistically significant either, with two noticeable exceptions. First, we find that mother's age at first birth influences daughter's age at first birth, but not son's. The interaction of father's age at first birth and sex of respondent does not have a significant effect, implying that father's age at first birth influences daughters as well as sons. Second, whereas the main effects of parents' religiosity on age at first birth are not statistically significant, the interaction terms with sex of respondent show that sons who grew

up with one or two religious parents do not differ in their timing of first birth from sons of non-religious parents, but that, unexpectedly, daughters with two religious parents tend to postpone the birth of their first child.

### *Mediating processes*

When studying the effects of the social status of the family of origin on fertility, it would be interesting to know to what extent these effects are mediated by the child's own social status achieved as an adult. We did not include socio-economic and cultural characteristics of the respondent in our main models, because they were measured at the time of the interview and might have changed since the period of childbearing; if so their effects on fertility would have been overestimated (e.g., see Kravdal 2007). However, to get some indication of whether the characteristics of the family of origin on fertility have independent effects or whether the effects are mainly a by-product of transmission of social status, we also ran our models with the respondent's education and religiosity included. Not surprisingly, we find that more educated people postpone their first birth. This effect is stronger for women than for men. More educated women also have fewer children, but this is not true for more educated men. Religious people have their first child earlier and have more children than non-religious people, and these effects do not differ by sex.

Including the respondent's own social status has little consequence for the effects of the family-of-origin variables. The effects of parents' fertility and of the experiences of family life during early adolescence do not change. The same is largely true for the effects of mother's education on age at first birth and on number of children; these effects remain significant and are reduced in size by only about one-fifth, once the child's education is taken into account. However, there are also indications that some of the effects of the social position of one's family of origin are mediated by one's own social position. The effects of father's education and job status on the adult child's age at first birth disappear, and the positive effect of parents' religiosity on the child's number of children even becomes negative. Finally, in the model for number of children, a significant positive effect of father's job status appears when the child's education is taken into account, which suggests that (expectations of) financial support from parents facilitates

having more children. However, as Table 3 shows, this does not lead to earlier childbearing.

### **Conclusion and discussion**

With regard to influences of the family of origin on fertility behaviour, the literature has focused mainly on direct transmission of fertility behaviour from parents to their children. We tried to generate new insights by also taking into account family experiences within the kinship network, and the socio-economic and cultural context of the family of origin. Moreover, we studied two aspects of fertility behaviour: age at first birth and final number of children. We now summarize and comment on our findings.

Our Hypotheses 1a and 1b—that age at first birth and number of offspring are positively related between generations—were confirmed. The effects of parents' age at first birth on the adult child's age at first birth and of number of siblings on number of children remain even after controlling for more variables than are usually controlled for in other studies. In addition we find that daughter's age at first birth is influenced by her mother's and father's ages at first birth, while son's age at first birth is influenced only by father's age at first birth. Most studies investigated only the transmission from mothers to their children, and suggested that the transmission from mothers to daughters was somewhat stronger than that from mothers to sons (Furstenberg et al. 1990; Horwitz et al. 1991; Barber 2001). These findings correspond with ours, but we find also that the influence of mothers on sons disappears when the influence of fathers is taken into account. We do not find sex differences in the effect of number of siblings on number of children, which is in line with the findings of Murphy and Knudsen (2002).

We find that positive experiences of family life in early adolescence lead to earlier childbearing and to having more children, which supports Hypotheses 2a and 2b. The experience of conflict between parents results in postponement of the first child and in having fewer children. It is striking that conflict between parents seems to have more of an effect than parents' divorce, suggesting that the fertility behaviour of the child is influenced by negative experiences in the parental home even when parents do not divorce. This result is in line with Fischer's findings (2004) on the impact of parents' divorce on other outcomes for the child. Her study showed that parents' divorce has almost no impact on a child's

problematic behaviour and educational career once the level of marital conflict is taken into account. This, of course, is not to suggest that divorce does not affect fertility levels, but that, at least in the Dutch case, it might do so by influencing the fertility level of the parental generation rather than that of the children's generation.

The finding that conflict between parents leads to postponement of childbearing might be considered surprising, because in contrast to our hypothesis it could be argued that the experience of conflict between parents could lead to the child leaving home early and embarking on childbearing early to escape from the home environment. However, most studies of this issue tested the likelihood of premarital motherhood (McLanahan and Bumpass 1988; Russell 1994; Barber 2001) or teenage motherhood (McLanahan and Bumpass 1988; Kiernan and Hobcraft 1997), which is rare in the Netherlands. Further, these studies usually tested the effect of divorce or living in a single-parent family, which could lead to teenage childbearing owing to a lack of supervision (Hogan and Kitagawa 1985; Barber 2001) rather than the effect of conflict between parents.

Experiences in the extended family in early adolescence also appear to matter for fertility behaviour, but they affect fertility timing rather than quantum: children from families with many overnight family visits start childbearing earlier, but do not have more births. Given that we have only limited information on experiences of the larger family network, it could well be that these effects of the extended family are even stronger than we have found. A better assessment of these effects would require the use of better information on family experiences, such as contact frequency and number and types of conflict within the extended family.

As an alternative to Hypotheses 2a and 2b, we suggested that positive experiences of family life in early adolescence strengthen the influence of parents' fertility behaviour on that of their children (H3a and H3b). These hypotheses were not supported. Earlier studies had found support for the idea that satisfaction with family life leads to a stronger influence of number of siblings on number of children, though the methods used by some of these earlier studies had limitations. Johnson and Stokes (1976), however, used a panel design and found that women's satisfaction with family life at age 16 positively influenced the strength of the effect of number of their siblings on their completed fertility. A potential explanation for the difference in findings between their study and ours is that

satisfaction with family life is an evaluative indicator of experience in the parental family, whereas we used more objective indicators. Cunningham and Thornton (2006) found that high quality of the parents' marriage, as reported by mother and child, strengthens intergenerational transmission of attitudes towards marriage. This might also be considered as being inconsistent with our results, but it seems reasonable to suppose that marital quality is more directly related to attitudes towards marriage than to fertility behaviour.

As well as experiences of family life in the kin network, the wider social context of the family of origin is also important in shaping fertility behaviour. A number of indicators of the socio-economic and cultural characteristics of the family of origin influence the timing of first birth as well as number of children, confirming Hypotheses 4a and 4b. The higher the mother's and father's educational attainment and the father's job status, the more their children postpone the first birth. In addition, mother's education negatively influences her children's number of births. We also find that the effects of mother's educational level on her children's age at first birth and number of children are largely independent of the transmission of social status, while the effects of father's education and job status are completely mediated by the child's educational attainment. People who grew up with religious parents have more children than children of non-religious parents, but this effect of parents' religiosity on number of children becomes negative after controlling for the child's religiosity, which itself has a positive effect on number of children. This suggests that non-religious children of religious parents not only have fewer children than children who 'inherited' religiosity from their parents, but even have fewer than non-religious children of non-religious parents. A similar mechanism seems to occur with regard to the effect of parents' religiosity on daughter's age at first birth. It could be that a child's refusal to adopt the parents' religious values also has consequences for other aspects of lifestyle.

The study's principal findings show that, taken together, its innovative aspects have proved to be worthwhile. First, we have shown that experiences of family life in early adolescence influence fertility in a direct way. Second, we have shown that parents' socio-economic and cultural characteristics influence their children's fertility, and we tentatively conclude that at least mother's education affects the timing and quantum of fertility independently of the social status achieved by the child as an adult. Third, by taking into account age at first birth and number of

children, we could show that experiences in the parental home influence both aspects of fertility, partly along the same lines: the parents' fertility behaviour, the degree of conflict between them, and mother's educational attainment affect both the timing and quantum of fertility. Yet, frequency of contact with relatives influences only the timing of first birth, and parents' religiosity stimulates children's fertility only by increasing the final number of children.

We conclude by pointing to the kinds of data that would be required for future research to go beyond the limits of our study. First, instead of the relatively limited information available to us on the experiences people had of family life in early adolescence, it would be interesting to include information on relationships between the respondent and his or her parents and siblings. Second, to examine to what extent the effects of the parental family's social status on the child's fertility behaviour are mediated by the child's adult life status, it would be better to have panel data. Third, the influence of the family of origin on fertility behaviour does not cease when the child leaves the parental home. The size of the parental family and the quality of relationships within it could influence the adult's fertility if the existence of kin support makes childrearing easier (Murphy and Wang 2001). The study of these issues requires longitudinal data about family relationships in adult life. Finally, like most investigators of the intergenerational transmission of fertility behaviour, we treated fertility as individual behaviour when it is in fact couple behaviour. Owing to lack of data, we were not able to include characteristics of the parental family of both partners, but doing so would make a valuable addition to fertility research.

## Notes

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